

PRECIS FROBENIUSI (STRAND 1909) STAT. NOV.
(LEPIDOPTERA — NYMPHALIDAE)

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Introduction

The extreme seasonal polyphenism exhibited by some *Precis* species has in the past caused some confusion amongst taxonomists. Earlier this century, breeding one form from another finally proved some of these butterflies to be conspecific. It was this extensive variation within a species and the resulting confusion, together with its rarity in collections, which undoubtedly led to the incorrect classification of *P. frobeniusi*.

For some years I have been investigating the seasonal polyphenism of certain African members of this genus (McLeod 1984) especially *P. octavia* Cramer and *P. archesia* Cramer. As one would expect, the range of seasonal variation within a species is limited and any deviation can immediately be recognised. During the studies of *P. archesia* I became well-acquainted with the range of variation between the two extreme phenotypes f. *obsoleta* Joicey and Talbot and f. *pelasgis* Godart (McLeod 1980). One of the forms of *P. archesia* previously described from West Africa was f. *frobeniusi* Strand, and I found the detailed description (after translation) to be rather puzzling. The insect did not readily fit into the normal range of variation exhibited by *P. archesia*.

I reproduce here my own translation of Strand's original description:

“archesia Cr. form Frobeniusi Strand n.v.

One specimen from Boola, two labelled : Liberian trip, north of Karawau.

The two proximal of the four transverse bars of the cell, which are normally blue are here a thick bright red. The two distal are slightly lighter than the ground colour of the wings but are surrounded with a deep black border.

*The discal bars and the submarginal bands are almost as in (*P.*) *coelestina* Dew., the discal bars are however slightly narrower, the sections in the species 1b, 2 and 3 are demarcated laterally by inward cuts and have bright white, broad-ringed pupils, of which that in space 2 is the largest.*

*The forewing discal bars divide as in *coelestina* but the distal branch is clearly resolved into spots, whereas the proximal is narrower posteriorly. The white pupils between them both are as on *coelestina*. The sections of the red discal bars of the hindwings are smaller and have larger pupils than those of *coelestina*.*

*The submarginal bands are as on f. *archesia* but are more pronounced and the white marginal lunules are even more sharply marked.*

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Blue or blue/white dusting of the hindwings as is normally found on the typical form is found here only on the tail appendage.

The ground colour is slightly darker.

The upperside is actually more similar to *P. coelestina* than *P. archesia* but the fact that it is a form of the later species is shown by the similarity of the undersides of the wings. Here, however, they appear cloudy and more uni-coloured because the grey-whitish dusting, which in the case of *f. archesia* forms about 5 - 6 transverse lines of flashes, is completely or almost completely missing here. A darker submedian line on the hindwings is difficult or impossible to recognise.

The reddish discal bar (of *f. archesia*) is here roughly red-brown with black pupils on the hindwings but with white pupils on the forewings approximately as in the typical form. However, those pupils in space 2 are considerably larger than the neighbouring ones, of which those in space 3 are just as clear as those in space 1b.

Wing span (male) approximately 50mm. Wing length 26-28mm.''

The illustration of this butterfly in Boorman & Roche (1959) did suggest to me that the insect was not in fact *P. archesia* but the photograph was in black and white. The above description plus a monochrome photograph were obviously inadequate information upon which to base conclusions. I therefore set out to locate further specimens. It soon became apparent that this butterfly was very rare in collections. In 1973 the British Museum had only one. This was the specimen figured in Boorman & Roche 1959. On seeing the single specimen in London it was immediately apparent to me that this butterfly was not a form of *P. archesia* but was a completely separate species. I decided that further specimens must be examined before raising it to species level. It was also noted that the specimen was a female and not a male as stated by Boorman & Roche.

Several other museums visited did not possess any examples of this butterfly. These included the Hope Department of Entomology, Oxford; the Museum Nationale, Paris; the Booth Museum of Natural History, Brighton (Hall Collection of Nymphalidae); the National Museum, Nairobi, Kenya; the National Museum, Pretoria, South Africa. The original three specimens upon which Strand based his description fortunately survived the bombing of Berlin during the second world war. While visiting the British Museum in 1973 I met R.G.T. St. Leger and on learning that he was soon to visit northern Nigeria I requested that he look out for this butterfly at Jos. Apparently he was lucky, and he later presented a further three specimens to the British Museum collection. These three individuals were all males.

In 1977 following further requests, I received ten specimens (5 males and 5 females) collected by W. Taylor at Vom, Plateau State, Nigeria.

It is upon these fourteen specimens that I base the following description which I hope will stress some of the unique characters of this butterfly.

Description

The wing patterns of both upperside and underside are typical of the genus and there appears to be little or no difference between the sexes. Females tend to be larger than the males. In the limited series examined the mean wingspans were: female 54mm and male 47mm.

Upperside

Both fore and hindwings closely resemble those of *P. coelestina* Dewitz. The main character which separates these two species is the post-discal bar, which is orange in both species, but tends to be slightly yellower in *coelestina*. The post discal bar of *coelestina* resembles a series of connected circles divided by the veins whereas that of *frobeniusi* is a definite bar with indentations at those points on each side where the veins traverse the bar. This gives the sections of post-discal bar within each space a characteristic wedge shape on both proximal and distal sides. The forewing post-discal bar divides as is typical of the genus, but the distal branch continues inwards along the apical margin of the forewing in spaces 8 and 9, and almost meets the end of the proximal branch. The ocelli situated in the post-discal bar are usually white-pupilled but sometimes pupils are absent from the ocellus in space 3 of the forewing. The ocellus of space 2 is invariably the largest. The white-pupilled ocelli of spaces 4, 5 and 6 are situated between the two branches of the post-discal bar. The broken sub-marginal bands are orange (as in *P. coelestina* and *P. limnora* Klug.). Those of *P. archesia*, when they exist, are never orange. The inner submarginal band is indistinct and cream coloured whereas the outer submarginal band is a very pronounced orange. The ground colour is dark brown throughout.

On the hindwings there is a pronounced projection of the wing edge at vein 5, and a less prominent projection of vein 2. (These characters do not occur in *P. archesia*, *P. coelestina* and *P. limnoria*, but are found in certain other species eg. *P. ceryne* Boisduv. f. *tukuoa* Wallengren and *P. natalica* Felder.)

Underside

The undersides of both fore and hindwings are a poor reflection of their uppersides.

The post-discal bar is less pronounced and is pale brown in colour, contrasting greatly with the dark brown of the basal half of the wings. The contrast is enhanced by a very narrow cream line which divides the post-discal bar from the basal half of the wing.

White pupils can be present in the small ocelli of the forewings but are often lacking on the hindwings.

A very dark circular area surrounds the ocellus of space 2 of the forewing. This dark area also shows a tendency to spread around the ocellus of space 3 and is an important distinguishing character.

The transverse bars of the cell of the forewing are here pale brown. Towards the wing bases of the hindwings are to be seen pale brown and greyish markings, the patterns of which are typical of this group of *Precis* spp.

The submarginal bands are here merged into one which can range in colour from cream, through pink to violet.

Distribution

1. Northern Nigeria. Confirmed locality: Jos, Bauchi (Plateau State).
2. Liberia? Unconfirmed (north of Karawau cited by Strand 1909).
3. Upper Guinea? Unconfirmed (Boola cited by Strand 1909).

No mention of this butterfly appears in *Butterflies of Liberia* (Fox *et al.* 1965). Most *Precis* species have wide ranges of distribution. The apparent limitation of this butterfly to the Plateau State of northern Nigeria tends to stress the relatively unusual conditions existing there. This fact is also reflected in other sections of the fauna.

Genitalia

Three preparations were made of male genitalia of *P. frobeniusi*. Unfortunately these were lost (together with those of *P. archesia*) during a move from France to South Africa in 1984. Consequently a detailed description cannot be given. Pencil sketches made at the time show that although the general appearance of the male genitalia of *P. frobeniusi* and *P. archesia* were similar, there were some obvious differences. The arrangement of the row of chitinous teeth of the valve was different in each species. Although the variation in arrangement of the teeth was fairly considerable within a species, differences between the two species enabled identification in the small sample available.

Habits

This butterfly is common at the beginning of the dry season, which lasts from October until May. It is particularly found along streams and

TABLE SHOWING IMPORTANT DIFFERENCES BETWEEN
FOUR *PRECIS* SPECIES

	<i>P. frobeniusi</i>	<i>P. limnoria</i>	<i>P. coelestina</i>	<i>P. archesia</i>
1. The edge of the hind wing extends into a small appendage at the extremity of vein 5	+	-	-	-
2. A smaller hind wing appendage is present at the extremity of vein 2	+	-	-	-
3. The submarginal bands are orange.	+	+	+	-
4. The post discal bar resembles a number of connected rings.	-	-	+	+
				<i>(f.chapunga)</i>
5. The distal branch of the forewing post-discal bar extends inwards along the apical margin to almost join the proximal branch	+	-	-	-
6. That portion of the post-discal bar in cell 2 of the forewing has the largest pupil.	+	-	+	-
7. Seasonal polyphenism	-	+	-	+
8. Distribution	Nigeria	East & Central Africa	East & West Africa	East, Central South & SW Africa

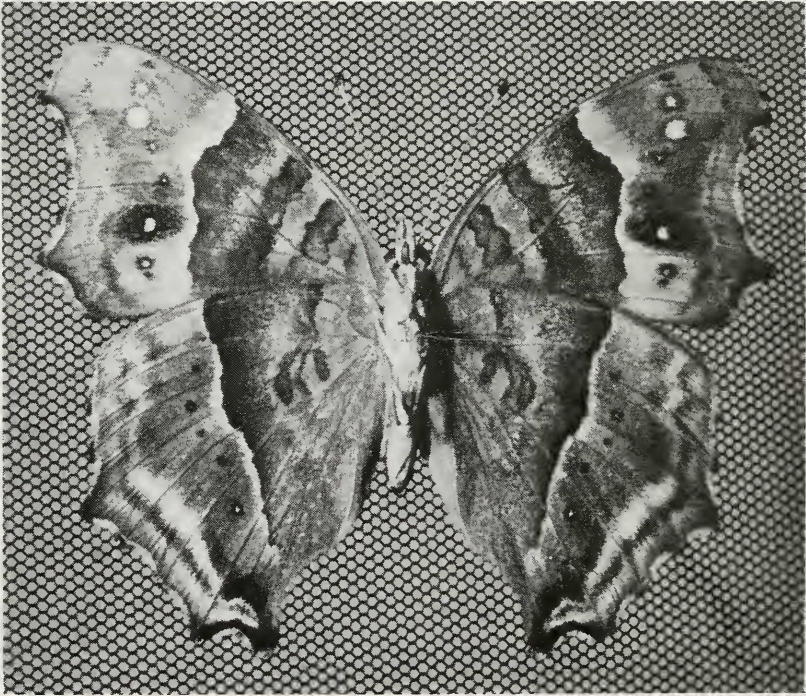
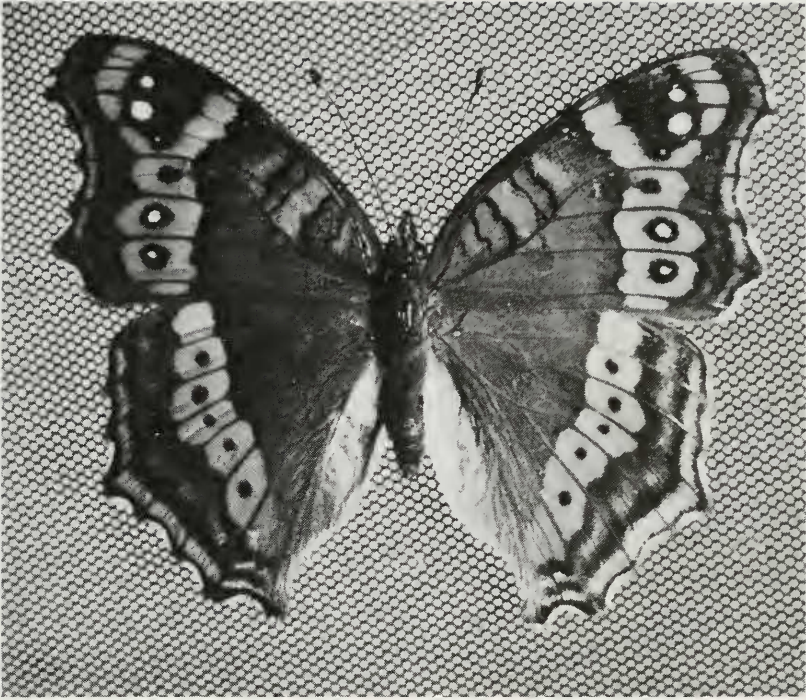


Fig. 1 (Top). *Precis frobeniusi* (Strand, 1909). Female upperside (x 1.34).

Fig. 2 (Below). As above. Female underside. (x 1.34).

stream beds in the dry savannah country between Jos and Bauchi. It is also fond of roosting in quarries. November is the month when the species is most numerous and it is blown far and wide by the wind, the Harmattan, a cool wind blowing southward from the Sahara. It is rarely seen between the end of December and May, when the rains begin, because it is aestivating, but occasional tattered specimens do appear.

The butterfly is noticeable for two reasons. Firstly, like most *Precis* species, it is attracted by garden flowers. Jos, being the centre of Nigerian tin mining and a hill station, has many nice gardens. Secondly, after emerging, the butterflies search for suitable places to roost and aestivate and thus find their way into buildings.

A wet season form is not described and it is quite likely that differences in pigmentation and wing shape are not pronounced between the two seasons. A single specimen taken in May 1975 by Mr Roberts, a biologist at the University of Jos, is at present the only fresh specimen known by the writer to have been taken during the wet season. The butterfly was apparently newly emerged and had straighter wing edges than the dry season form. It is unusual that *P. frobeniusi* is less common during the wet season. Other *Precis* species eg. *P. octavia* Cramer and *P. antilope* Feisth. are commoner during the wet season than during the dry season.

The importance of *P. frobeniusi* lies in its relatively limited distribution when compared with other species of the genus. A greater knowledge of its distribution, the physical or climatic factors which led to its segregation, and its present biological requirements, will greatly improve our understanding of speciation within the genus *Precis*.

Conclusion

Whilst the original description made by Strand of *Precis archesia* f. *frobeniusi* remains valid, the evidence presented in this paper suggests that *frobeniusi* is a distinct species.

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